

CLAIMS

1. Austenitic nickel-chromium-molybdenum alloys with additions of silicon, characterized by alloy components (in mass percentages) :

add B1

Cr	18 - 22 %
Mo	6 - 10 %
Si	0.6 - 1.7 %
C	0.002 - 0.05 %
Fe	1 - 5 %
Mn	0.05 - 0.5 %
Al	0.1 - 0.5 %
Ti	0.1 - 0.5 %
Mg	0.005 - 0.05 %
Ca	0.001 - 0.01 %
V	max. 0.5 %
P	max. 0.02 %
S	max. 0.01 %
B	0.001 - 0.01 %
Cu	max. 0.5 %
Co	max 1 %
Nb	max. 0.5 %

Hf and/or Y and/or Zr and/or rare earth elements - 0.02 - 0.5%  
the remainder being nickel and impurities caused by the melting process.

2. Alloy as in claim 1, characterized by alloy components (in mass percentages):

Cr	18 - 20 %
Mo	8 - 9.0 %
Si	0.7 - 1.1 %
C	0.002 - 0.15 %
Fe	2.5 - 3.5 %
Mn	0.05 - 0.1 %
Al	0.1 - 0.3 %
Ti	0.1 - 0.4 %
Mg	0.005 - 0.15 %

Ca 0.001 - 0.005 %

V max. 0.1 %

P max. 0.002 %

S max. 0.001 %

B 0.001 - 0.001 %

Cu max. 0.5 %

Hf and/or Y and/or Zr and/or rare earth elements - 0.03 - 0.06%  
the remainder being nickel and impurities caused by the melting process.

3. Alloy as in claim 1, characterized by a molybdenum content between 6.5 and 9.5 %

4. Alloy as in claim 1, characterized by a silicon content between 0.6 and 1.3 %

*as* 5. Utilization of the alloy as in <sup>Claim 1</sup> ~~one of the claims 1 to 4~~, for the production of pipes, sheet metal, band material, foils, wires as well as of items made of these semi-products.

*a* 6. Utilization of the alloy according to <sup>Claim 1</sup> ~~one of the claims 1 to 4~~ for the production of composite pipes.

*a* 7. Utilization of the alloy according to the invention as in <sup>Claim 1</sup> ~~one of the claims 1 to 4~~ as corrosion protection in form of applied welding or plating.

**Table 1: Examples of Alloys**

Example	Chemical Composition in %
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REPLACEMENT PAGE (RULE 26)

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**Fig. 1:** Loss of mass (metal loss) after 240 hour aging of salt-subjected samples in air at 750°C

**SALT: 0.9 MOL NaCl, 0.1 MOL CaCl<sub>2</sub>, 0.25 mol NaHCO<sub>3</sub>**

**Mass  
Change  
in  
g/m<sup>2</sup>**

Example A	Example B	Example D	Example E
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**Fig. 2**

**Metallographically determined corrosion effect after 240 hours aging of samples subjected to salt, in air at 750°C**

**Salt:** 0.9 mol NaCl, 0.1 mol CaCl<sub>2</sub>, 0.25 mol NaHCO<sub>3</sub>

### Internal corrosion effect

## Corrosion

**effect in**

mm

### Example A

### Example B

### Example D

### Example E

**Replacement page (rule 26)**

**Fig. 3:**

**Internal corrosion, metal removal and overall corrosion effect after 1000 hours of aging  
(600°C) in synthetic waste burning gas**

**Boiler ash coatings**

**Internal corrosion**

**Corrosion**

**effect**

**in mm**

**Example F    Example G**

**2,4856**

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**Fig. 4:**

**Overall corrosion effect after 1008 hours aging at 750°C in synthetic waste burning gas;**

**Samples coated with Na<sub>2</sub>SO<sub>4</sub> / KCl (750°C)**

**Internal corrosion**

**Metal removal**

**Corrosion**

**effect**

**in mm**

**Example F 2.4856**

**Example G 9% Mo Example H 16% Mo**

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**Fig. 5:**

**Notch Bar Test Toughness of Ni-20Cr-9Mo-Si Alloys after aging in air at 600° C**

**Notch**

**Bar Test**

**Toughness**

**in**

**J/cm<sup>2</sup>**

**2.4856**

**Example A**

**Example B**

**Example D**

**Example E**

**Replacement page (Rule 26)**

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